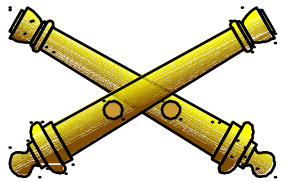
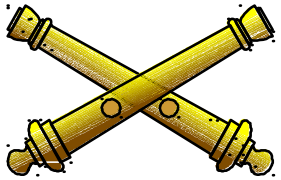
GUNNERY DEPARTMENT



THE KING OF BATTLE

USAFAS

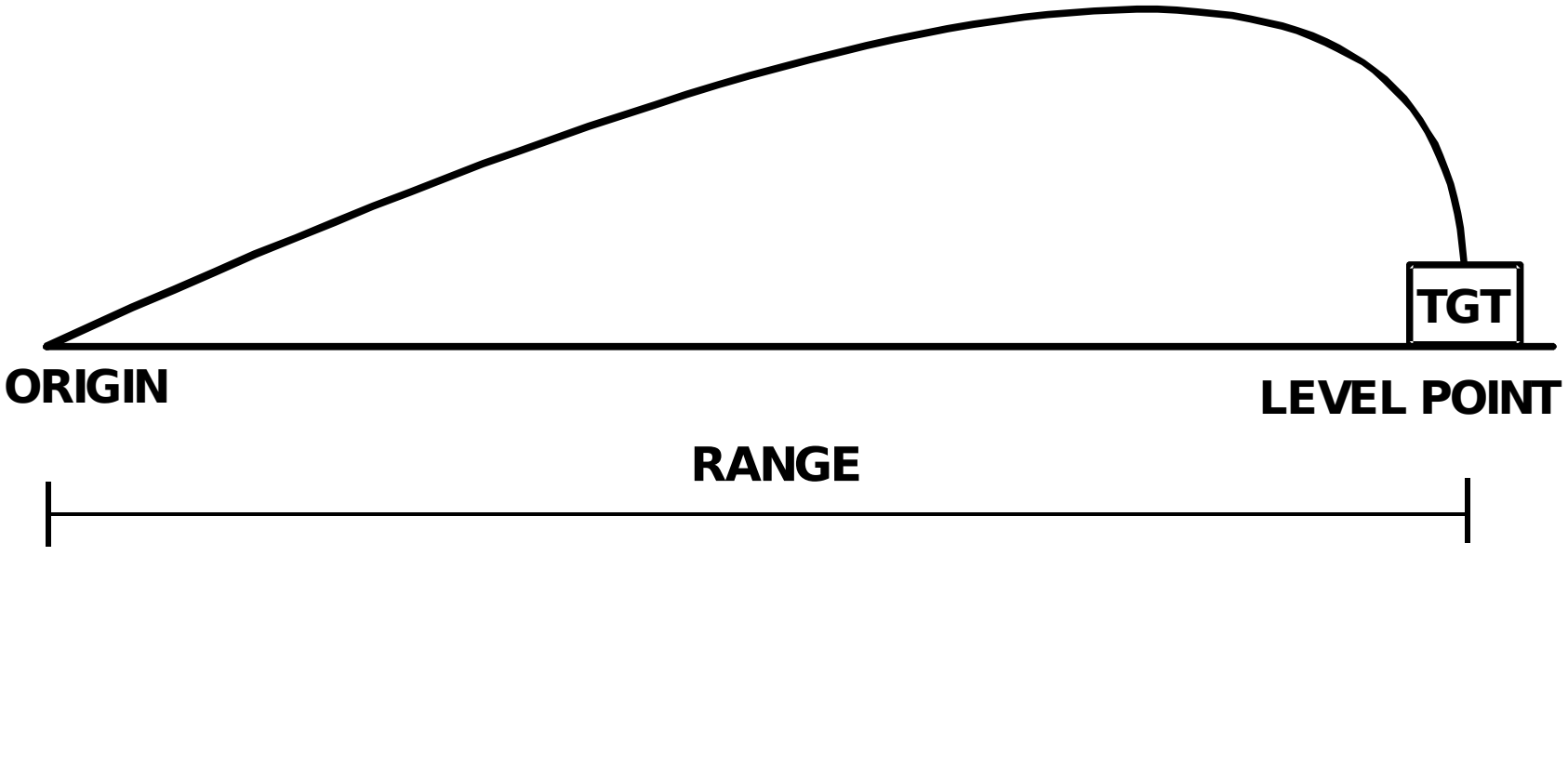


STANDARD CONDITIONS

POSITION

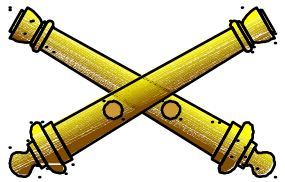
1. GUN, TARGET, AND MDP AT SAME ALTITUDE
2. ACCURATE RANGE
3. NO ROTATION OF THE EARTH

GUNNERY DEPARTMENT

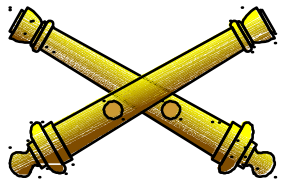


USAFAS

GUNNERY DEPARTMENT

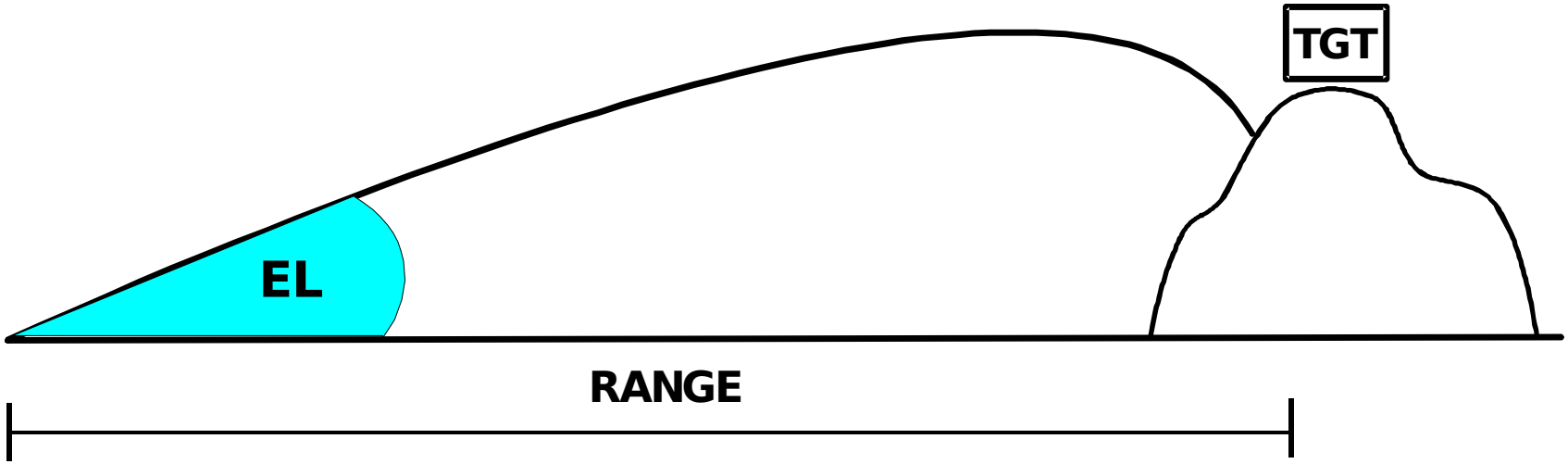


USAFAS



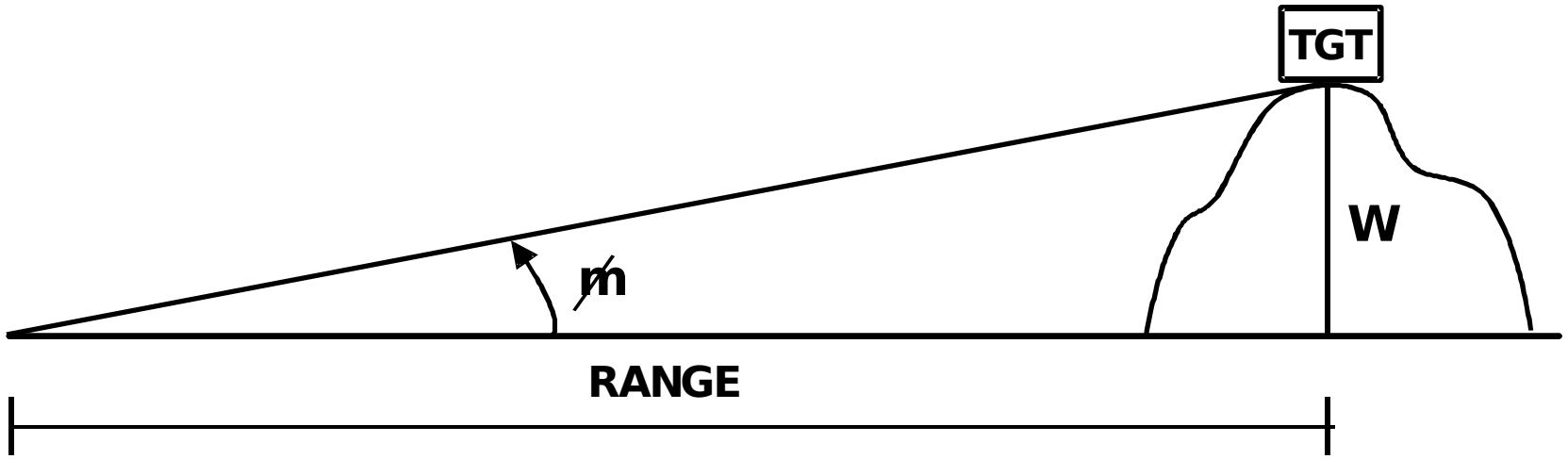
GUN AND TARGET *NOT* AT THE SAME ALTITUDE

GUNNERY DEPARTMENT



USAFAS

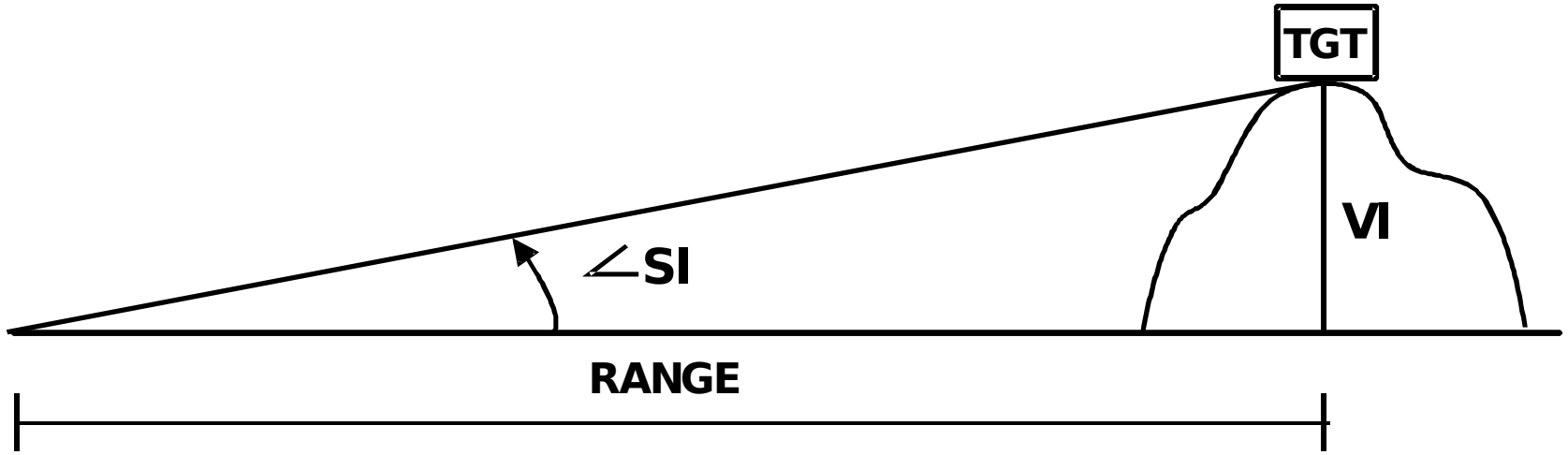
GUNNERY DEPARTMENT



$$W = R\ (1000s)\ x\ m$$

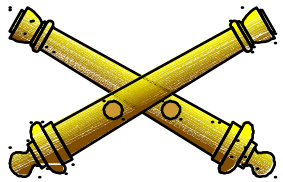
USAFAS

GUNNERY DEPARTMENT



$$VI = R\ (1000s) \times \angle SI$$

USAFAS



MANUAL COMPUTATION

GIVEN: TGT ALT 393m RG 4650m
PLT ALT 355m CHG 4GB

GUNNERY DEPARTMENT

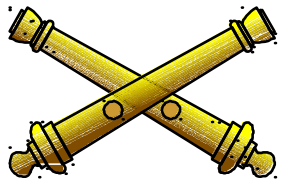
EQUATIONS

1. VI = TGT ALT - PLT ALT (+/-) NEAREST 1

USAFAS

GUNNERY DEPARTMENT

EQUATIONS

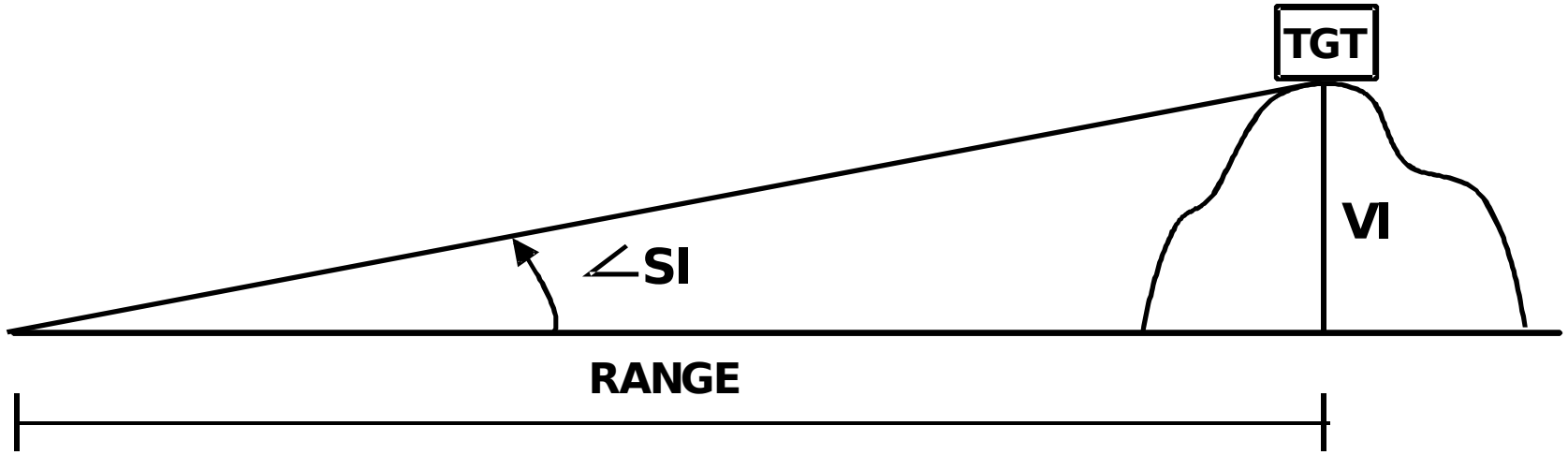


1. VI = TGT ALT - PLT ALT (+/-) NEAREST 1

   VI = 393 - 355 = +3

USAFAS

GUNNERY DEPARTMENT

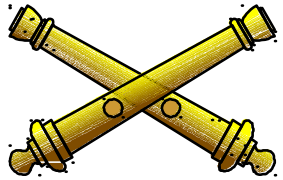


VI = R (1000s) x ∠ SI

USAFAS

GUNNERY DEPARTMENT

EQUATIONS



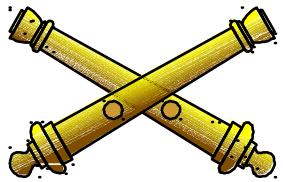
1. VI = TGT ALT - PLT ALT (+/-) NEAREST 1

2. ΔSI = $\frac{\text{VI}}{\text{RG (1000s)}}$ x 1.0186 (+/-) NEAREST

USAFAS

GUNNERY DEPARTMENT

EQUATIONS



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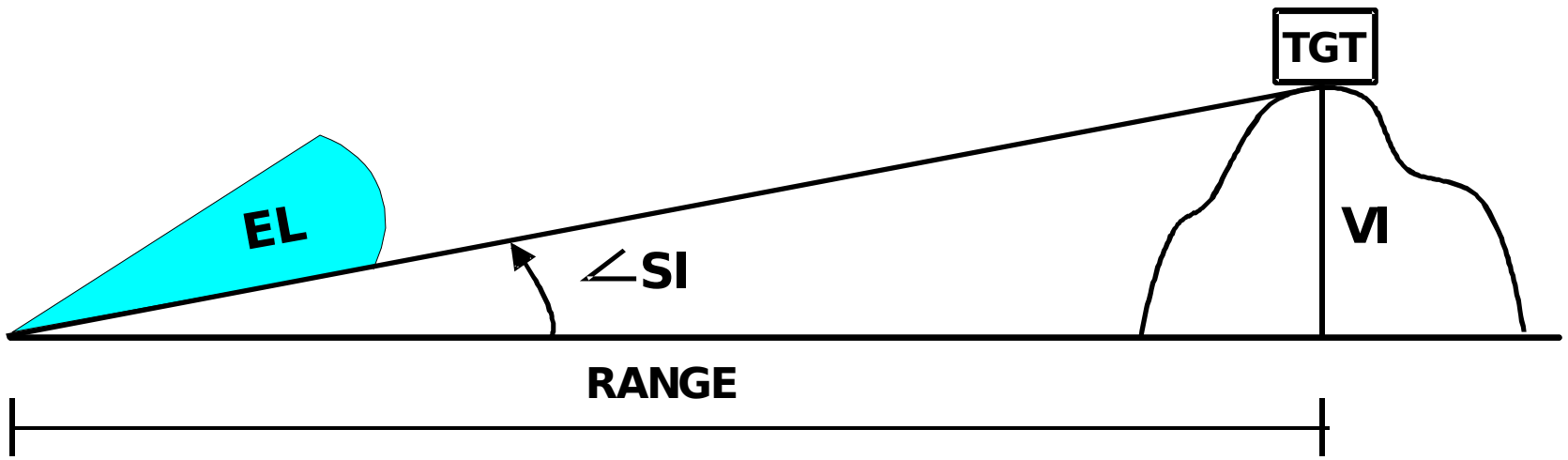
   VI = 393 - 355 = +3

2. ΔSI = $\frac{\text{VI}}{\text{RG (1000s)}}$ x 1.0186 (+/-) NEAREST

   ΔSI = (+38 ÷ 4.65) x 1.0186 = +8.32 ≈ +

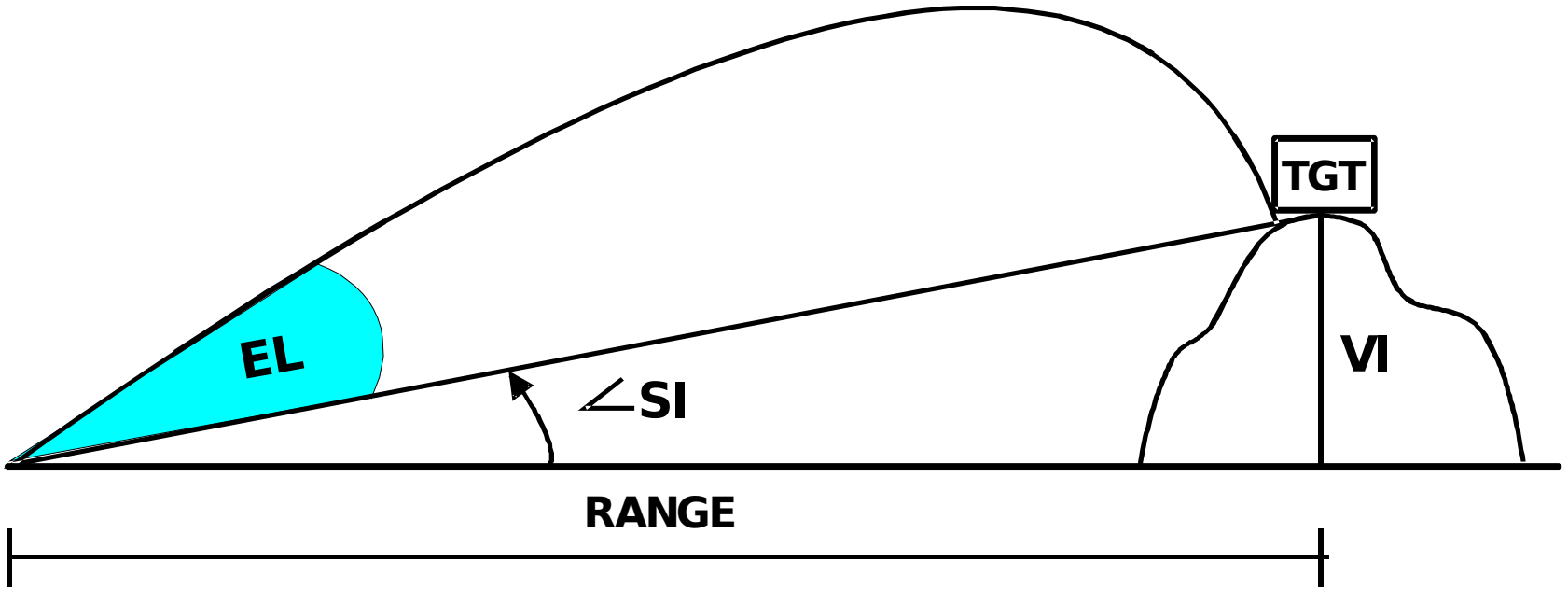
USAFAS

GUNNERY DEPARTMENT



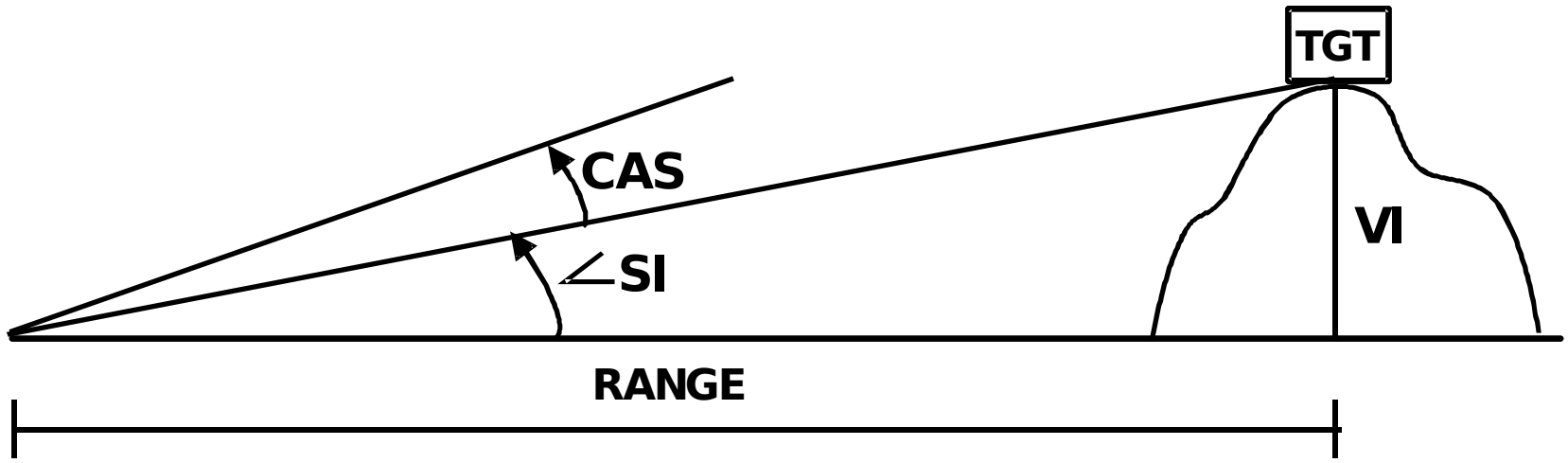
USAFAS

GUNNERY DEPARTMENT



USAFAS

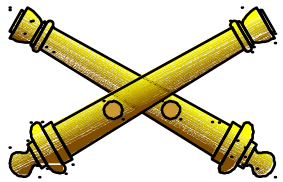
GUNNERY DEPARTMENT



USAFAS

GUNNERY DEPARTMENT

EQUATIONS



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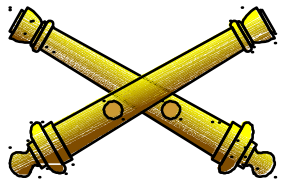
3. CAS = ABS VAL ΔSI x CSF (+/-) NEAREST 0

USAFAS

GUNNERY DEPARTMENT

EQUATIONS



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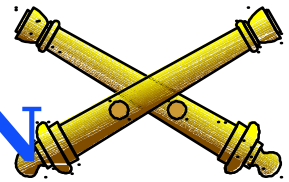
USAFAS



COMP SI FACTOR INTERPOLATION

TABLE G, TFT

500	150	4500	+0.075
		4650	X
		5000	?
			+0.103

+0.

USAFAS

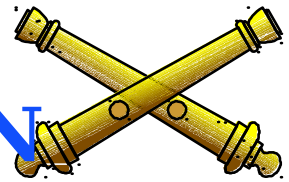
COMP SI FACTOR INTERPOLATION

TABLE G, TFT

500	150	4500	+0.075
		4650	X
		5000	?
			+0.103

$$\frac{150}{500} = \frac{X}{+0.028}$$

USAFAS



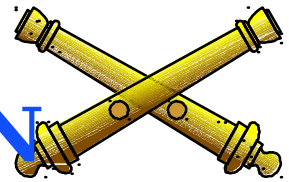
COMP SI FACTOR INTERPOLATION
TABLE G, TFT

	4500	+0.075	
150		X	
500	4650	?	+0.(
	5000	+0.103	

$$500X = (150)(+0.028)$$

$$\frac{150}{500} \quad \frac{X}{+0.028}$$

USAFAS



COMP SI FACTOR INTERPOLATION
TABLE G, TFT

		4500	+0.075
	150		X
500		4650	?
		5000	+0.103

+0.

$$500X = (150)(+0.028)$$

$$500X = +4.2$$

$$\frac{150}{500} = \frac{X}{+0.028}$$

USAFAS

COMP SI FACTOR INTERPOLATION
TABLE G, TFT

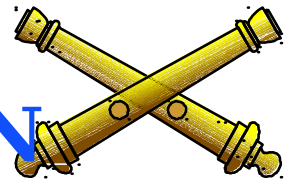
	4500	+0.075	
150		X=+0.008	
500	4650	?	+0.0
	5000	+0.103	

$$500X = (150)(+0.028)$$
$$500X = +4.2$$
$$X = +0.0084 \approx +0.00$$

$$\frac{150}{500} \quad \frac{X}{+0.028}$$

USAFAS

GUNNERY DEPARTMENT



COMP SI FACTOR INTERPOLATION
TABLE G, TFT

4500		+0.075
150		X=+0.008
500	4650	?
	5000	+0.103

$$500X = (150)(+0.028)$$

$$500X = +4.2$$

$$X = +0.0084 \approx +0.00$$

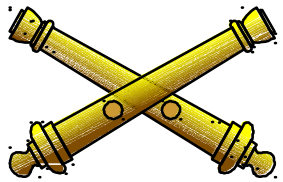
$$\frac{150}{500} = \frac{X}{+0.028}$$

?: (+0.075) + (+0.008) = +0.

USAFAS

GUNNERY DEPARTMENT

EQUATIONS



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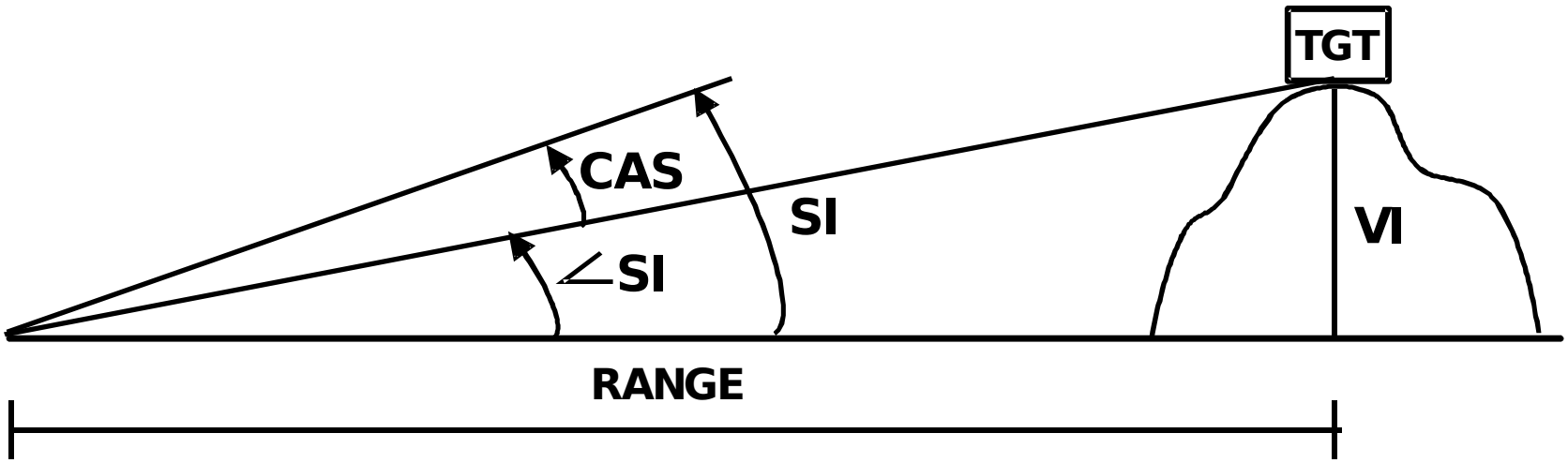
   ΔSI = (+38 ÷ 4.65) x 1.0186 = +8.32 ≈ +
3. CAS = ABS VAL ΔSI x CSF (+/-) NEAREST 0
   CAS = 8.3 x (+0.083) = +0.69 ≈ +0.7

USAFAS

GUNNERY DEPARTMENT



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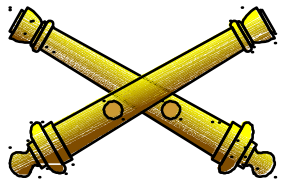

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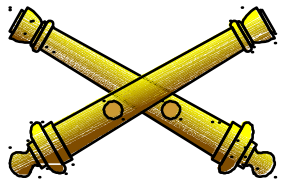
4. SI = ΔSI + CAS (+/-) NEAREST 1 mil

USAFAS

GUNNERY DEPARTMENT

EQUATIONS



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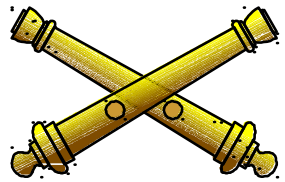
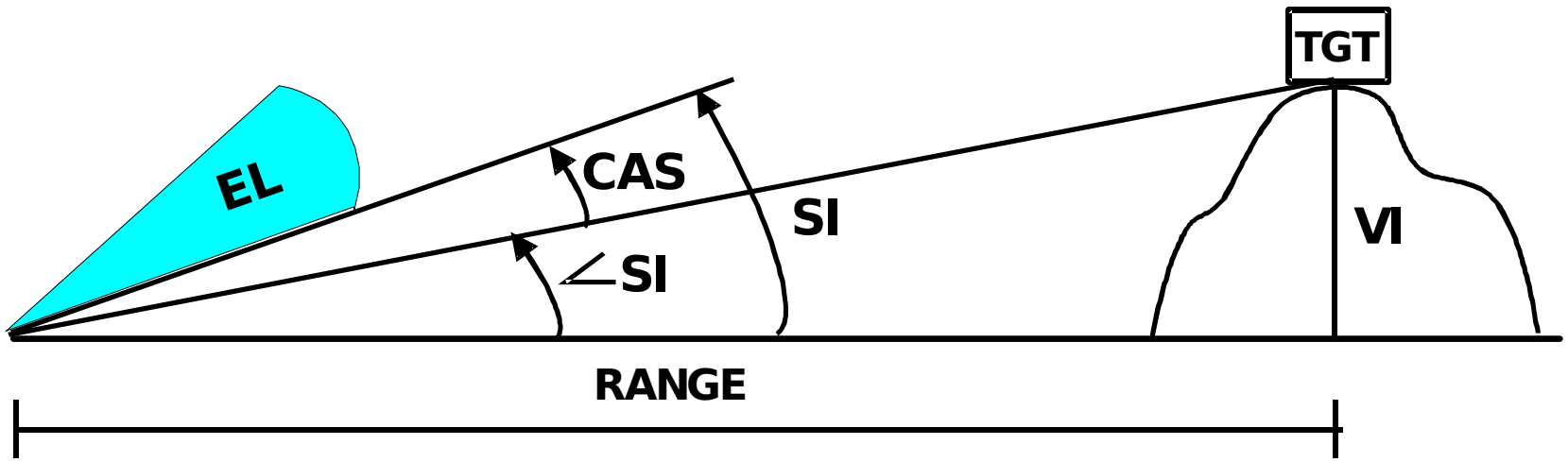
3. CAS = ABS VAL ΔSI x CSF (+/-) NEAREST 0
   CAS = 8.3 x (+0.083) = +0.69 ≈ +0.7
4. SI = ΔSI + CAS (+/-) NEAREST 1 mil
   SI = (+8.3) + (+0.7) = +9.0 ≈ +9

USAFAS

GUNNERY DEPARTMENT





USAFAS

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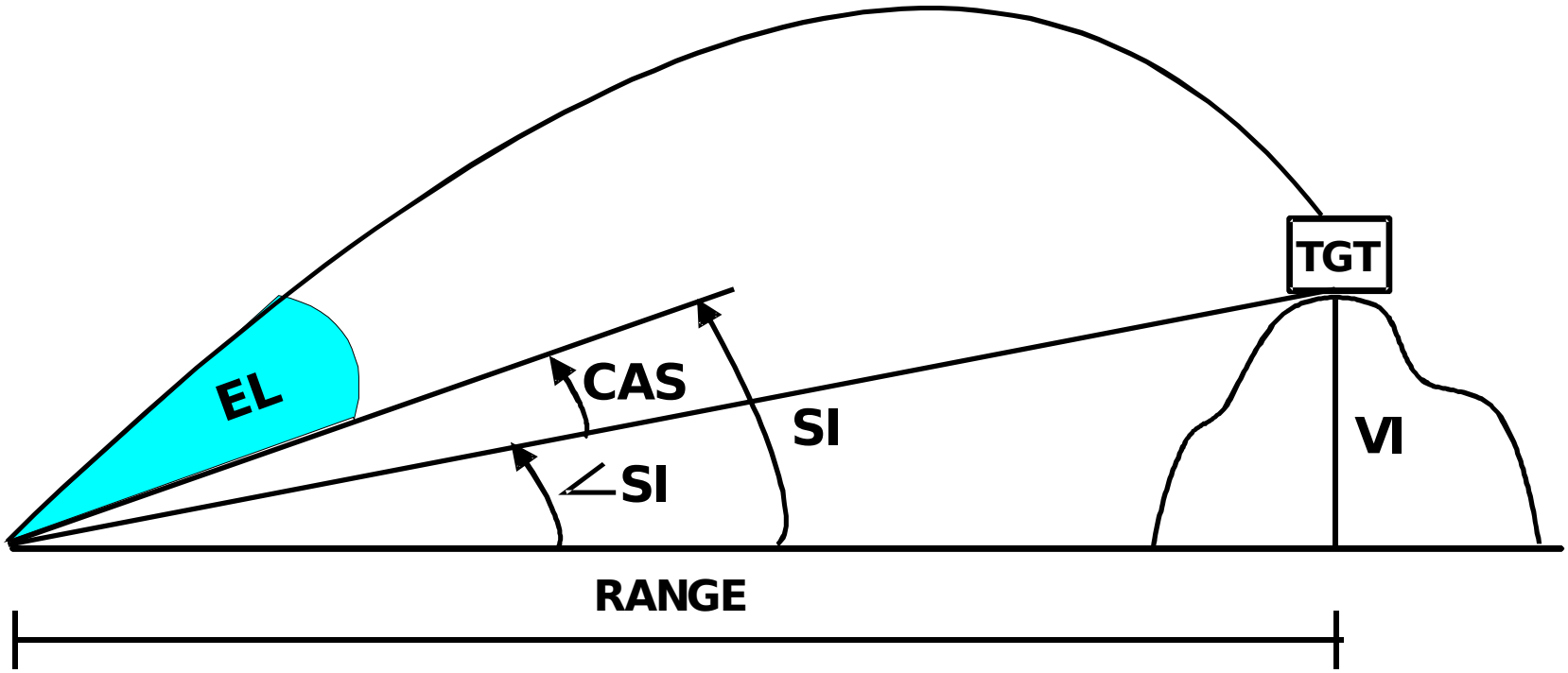

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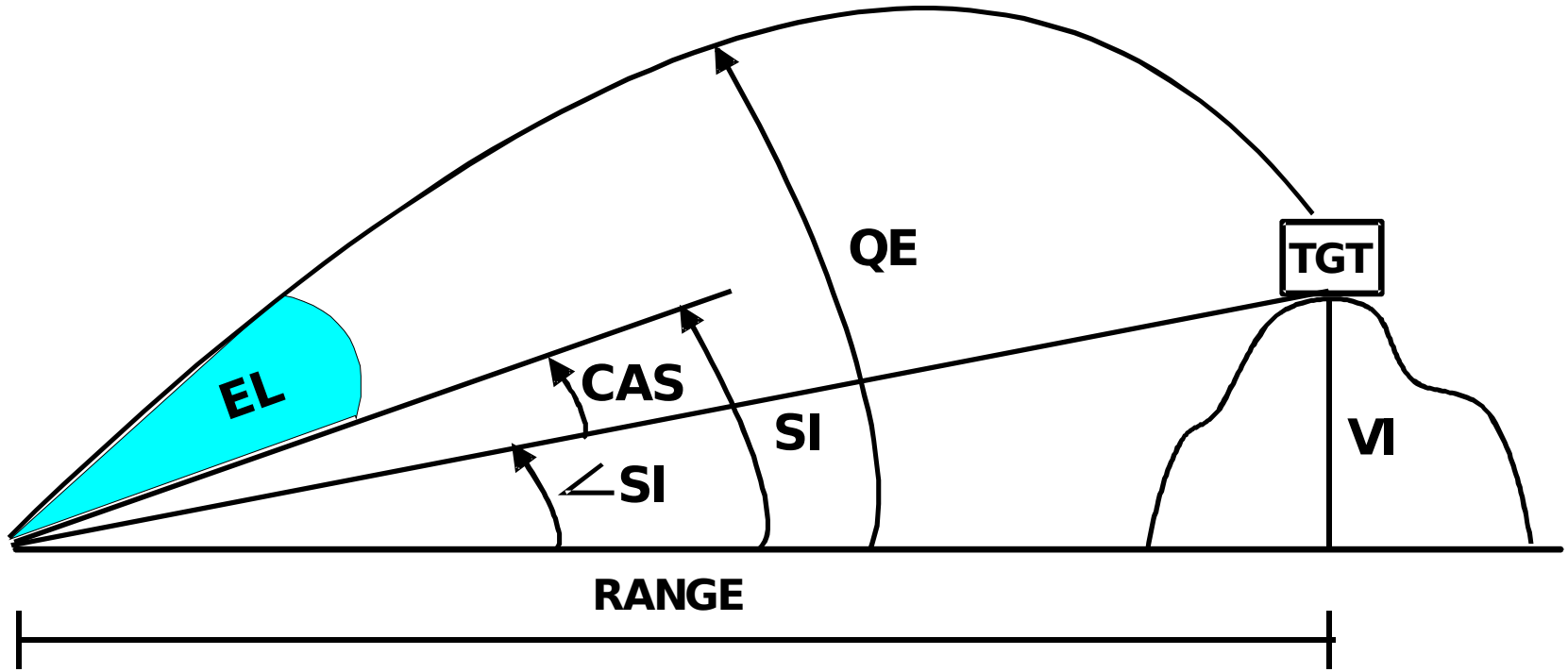

USAFAS

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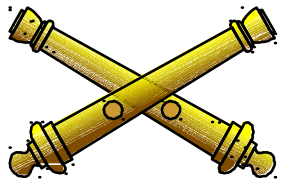
EQUATIONS



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3. CAS = ABS VAL ΔSI x CSF (+/-) NEAREST 0

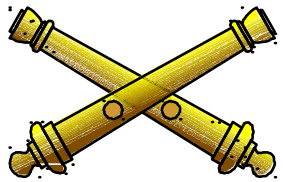
4. SI = ΔSI + CAS (+/-) NEAREST 1 mil

5. QE = EL + SI NEAREST 1 mil

USAFAS

GUNNERY DEPARTMENT

EQUATIONS



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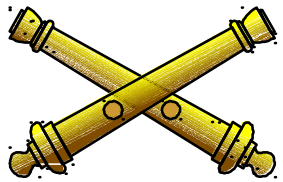
3. CAS = ABS VAL ΔSI x CSF (+/-) NEAREST 0
   CAS = 8.3 x (+0.083) = +0.69 ≈ +0.7
4. SI = ΔSI + CAS (+/-) NEAREST 1 mil
   SI = (+8.3) + (+0.7) = +9.0 ≈ +9
5. QE = EL + SI NEAREST 1 mil
   QE = 278 + (+9) = 287

USAFAS

GUNNERY DEPARTMENT

EQUATIONS



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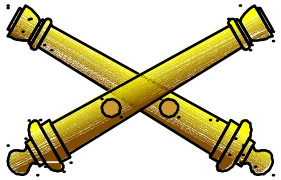
USAFAS

GUNNERY DEPARTMENT

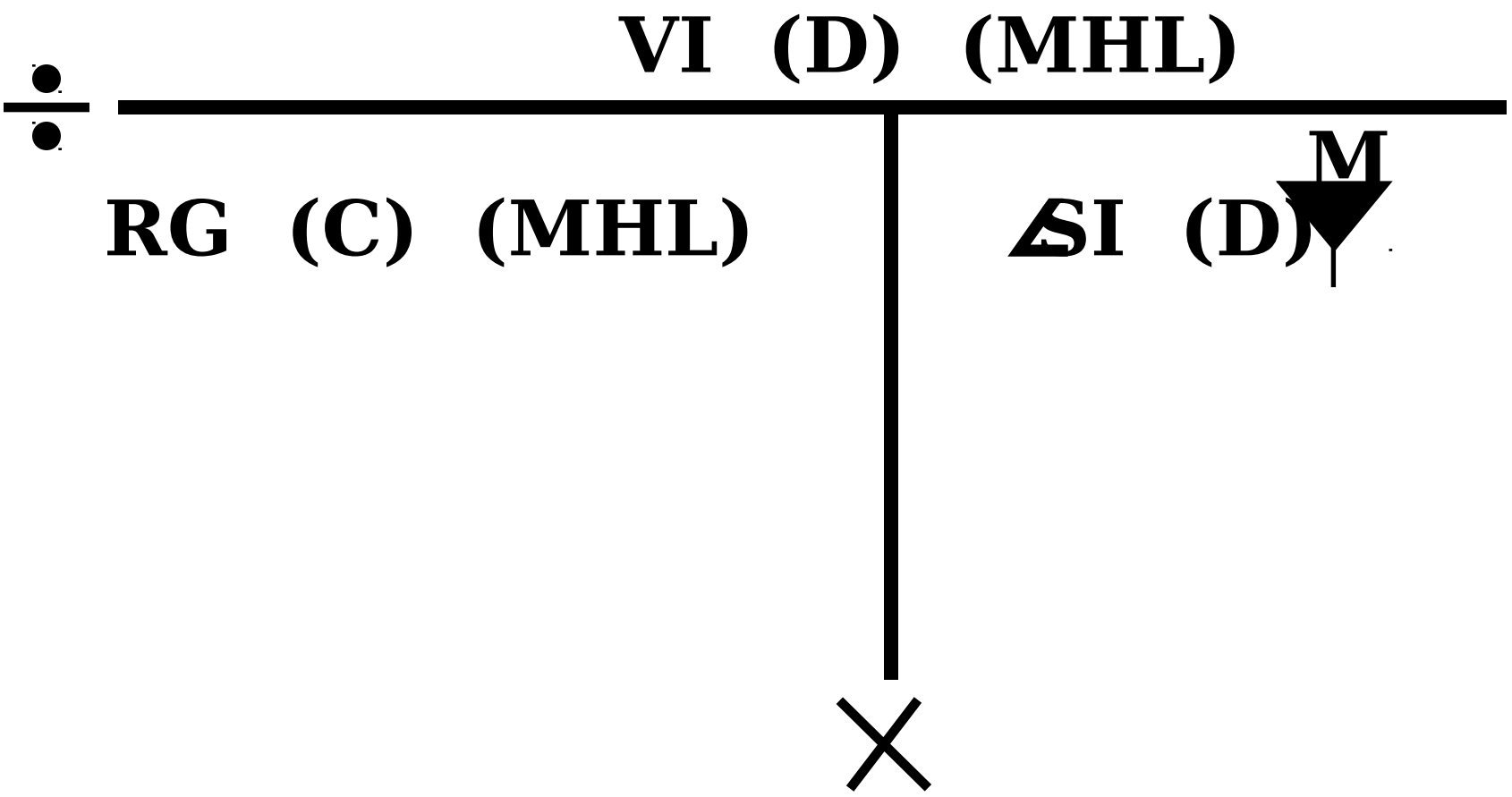


GST

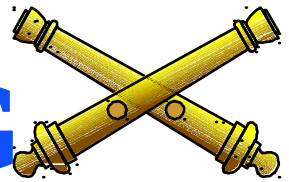
USAFAS

GUNNERY DEPARTMENT

“MAGIC-T”

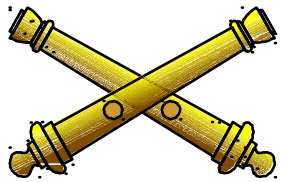


USAFAS



RULES FOR READING THE GST

- EXTRACT THREE NUMBERS
- PLACE THE DECIMAL POINT - MAKE AS LARGE AS POSSIBLE W/O EXCEEDING VI
- EXPRESS TO THE APPROPRIATE ACCURACY - SI, VA : 1 mil - ΔSI : 0.1 mil - VI : 1 meter
- SAME SIGN AS VI

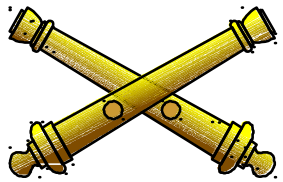


ΔSI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 370

RG	ALT	VI	ΔSI
5170	425		
3910	363		
4150	372		
6340			+6.0
4500		+25	
5720			-4.0
7350	350		

USAFAS

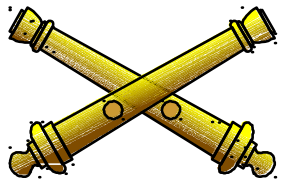


SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 370

RG	ALT	VI	SI
5170	425	+55	+10.8
3910	363		
4150	372		
6340			+6.0
4500		+25	
5720			-4.0
7350	350		

USAFAS



SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 370

RG	ALT	VI	SI
5170	425	+55	+10.8
3910	363	-7	-1.8
4150	372		
6340			+6.0
4500		+25	
5720			-4.0
7350	350		

USAFAS

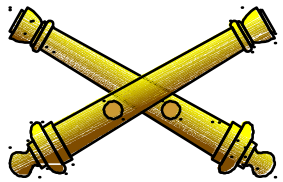
GUNNERY DEPARTMENT

SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 370

RG	ALT	VI	SI
5170	425	+55	+10.8
3910	363	-7	-1.8
4150	372	+2	+0.5
6340			
4500		+25	
5720			-4.0
7350	350		

USAFAS

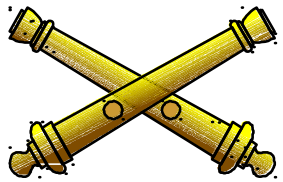


SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 370

RG	ALT	VI	SI
5170	425	+55	+10.8
3910	363	-7	-1.8
4150	372	+2	+0.5
6340	407	+37	+6.0
4500		+25	
5720			-4.0
7350	350		

USAFAS

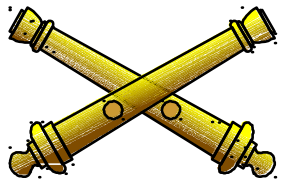


SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 370

RG	ALT	VI	SI
5170	425	+55	+10.8
3910	363	-7	-1.8
4150	372	+2	+0.5
6340	407	+37	+6.0
4500	395	+25	+5.6
5720			-4.0
7350	350		

USAFAS

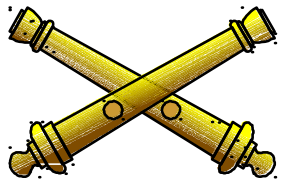


SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 370

RG	ALT	VI	SI
5170	425	+55	+10.8
3910	363	-7	-1.8
4150	372	+2	+0.5
6340	407	+37	+6.0
4500	395	+25	+5.6
5720	348	-22	-4.0
7350	350		

USAFAS

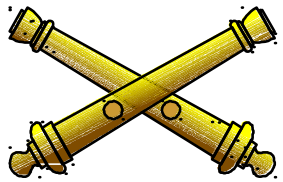


SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 370

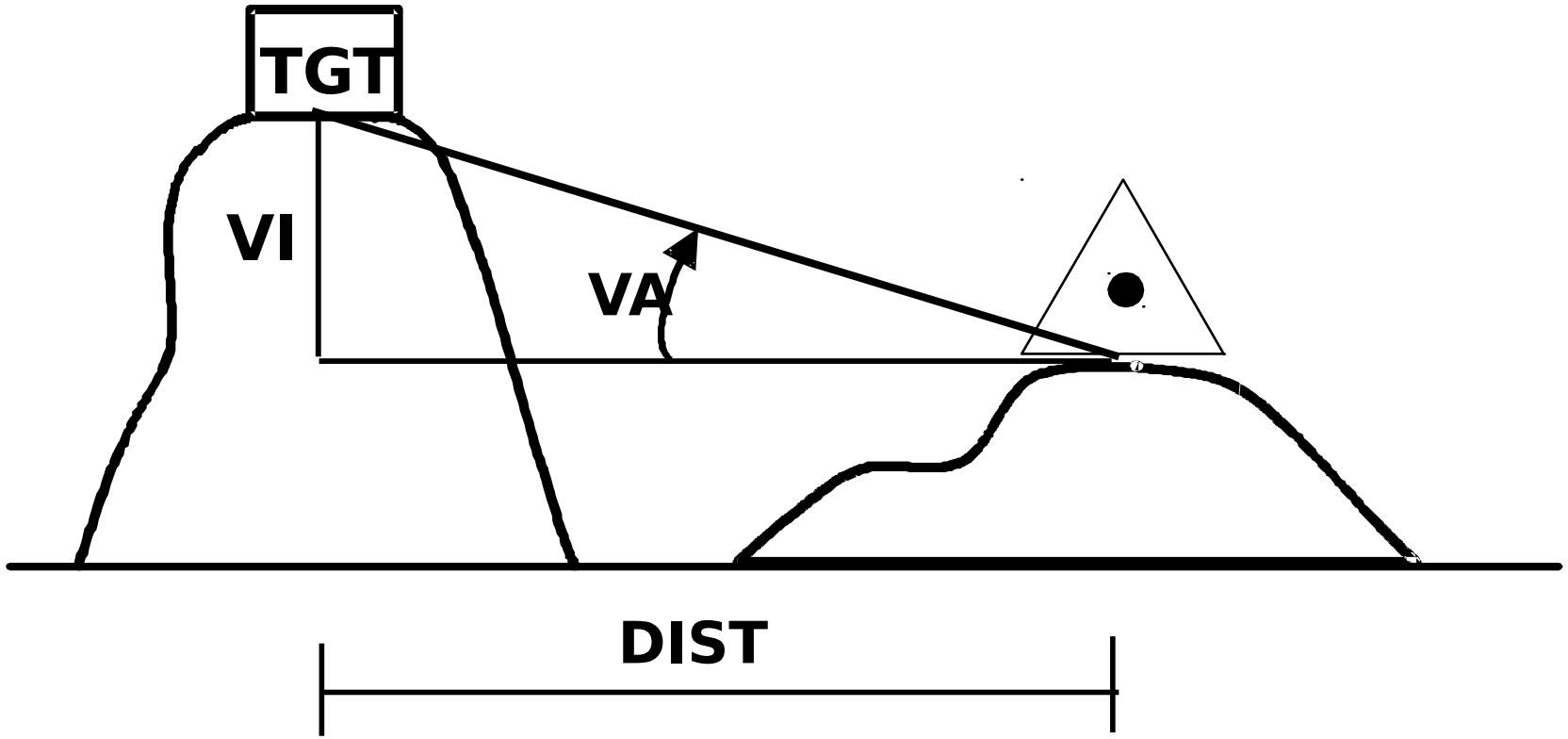
RG	ALT	VI	SI
5170	425	+55	+10.8
3910	363	-7	-1.8
4150	372	+2	+0.5
6340	407	+37	+6.0
4500	395	+25	+5.6
5720	348	-22	-3.9
7350	350	-20	-2.8

USAFAS



VERTICAL ANGLE (VA)

GUNNERY DEPARTMENT



VI = DIST (1000s) x VA

USAFAS

GUNNERY DEPARTMENT

“MAGIC-T”

VI (D) (MHL)

RG (C) (MHL)

ΔSI (D)

DIST (C) (MHL)

VA (D)

USAFAS

VA PEs (GST)

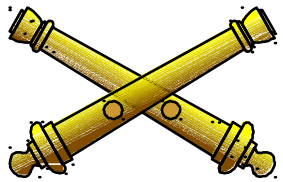
GIVEN: GST 155 AM-2
PROJ HE M107
OBS ALT 412

DIST	ALT	VI	VA
4360	325		
5610	418		
2430			
9840	408		
3770		+23	
1930			
2990	441		

USAFAS

+1

-32

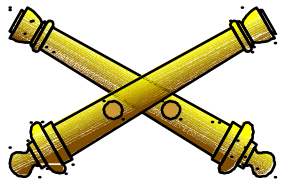


VA PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
OBS ALT 412

DIST	ALT	VI	VA
4360	325	-87	-20
5610	418		
2430			+17
9840	408		
3770		+23	
1930			-32
2990	441		

USAFAS

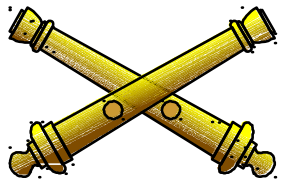


VA PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
OBS ALT 412

DIST	ALT	VI	VA
4360	325	-87	-20
5610	418	+6	+1
2430			+17
9840	408		
3770		+23	
1930			-32
2990	441		

USAFAS



VA PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
OBS ALT 412

DIST	ALT	VI	VA
4360	325	-87	-20
5610	418	+6	+1
2430	452	+40	+17
9840	408		
3770		+23	
1930			-32
2990	441		

USAFAS

GUNNERY DEPARTMENT

VA PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
OBS ALT 412

DIST	ALT	VI	VA
4360	325	-87	-20
5610	418	+6	+1
2430	452	+40	+17
9840	408	-4	0
3770		+23	
1930			-32
2990	441		

USAFAS

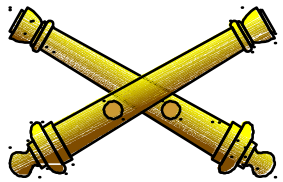
GUNNERY DEPARTMENT

VA PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
OBS ALT 412

DIST	ALT	VI	VA
4360	325	-87	-20
5610	418	+6	+1
2430	452	+40	+17
9840	408	-4	0
3770	435	+23	+6
1930			-32
2990	441		

USAFAS



VA PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
OBS ALT 412

DIST	ALT	VI	VA
4360	325	-87	-20
5610	418	+6	+1
2430	452	+40	+17
9840	408	-4	0
3770	435	+23	+6
1930	351	-61	-32
2990	441		

USAFAS

GUNNERY DEPARTMENT

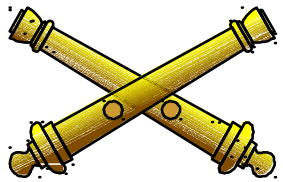
VA PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
OBS ALT 412

DIST	ALT	VI	VA
4360	325	-87	-20
5610	418	+6	+1
2430	452	+40	+17
9840	408	-4	0
3770	435	+23	+6
1930	351	-61	-32
2990	441	+29	+10

USAFAS

GUNNERY DEPARTMENT



SITE (SI)

USAFAS

GUNNERY DEPARTMENT

“MAGIC-T”

VI (D) (MHL)

RG (C) (MHL)

SI (D)

DIST (C) (MHL)

VA (D)

RG(SI-RG)(MHL)SI(D)

M

M

M

USAFAS

GUNNERY DEPARTMENT

SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 438

RG	CHG	ALT	VI	SI
3540	3	463		
5160	4		-42	
5430	3		+45	
7370	4	430		
6510	6	504		
3220	3		+64	
6630	4	420		

USAFAS

SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 438

RG	CHG	ALT	VI	SI
3540	3	463	+25	+8
5160	4		-42	
5430	3		+45	
7370	4	430		
6510	6	504		
3220	3		+64	
6630	4	420		

USAFAS

GUNNERY DEPARTMENT

SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 438

RG	CHG	ALT	VI	SI
3540	3	463	+25	+8
5160	4	396	-42	-9
5430	3		+45	
7370	4	430		
6510	6	504		
3220	3		+64	
6630	4	420		

USAFAS

GUNNERY DEPARTMENT

SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 438

RG	CHG	ALT	VI	SI
3540	3	463	+25	+8
5160	4	396	-42	-9
5430	3	483	+45	+1
7370	4	430		
6510	6	504		
3220	3		+64	
6630	4	420		

USAFAS

GUNNERY DEPARTMENT

SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 438

RG	CHG	ALT	VI	SI
3540	3	463	+25	+8
5160	4	396	-42	-9
5430	3	483	+45	+1
7370	4	430	-8	-2
6510	6	504		
3220	3		+64	
6630	4	420		

USAFAS

GUNNERY DEPARTMENT

SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 438

RG	CHG	ALT	VI	SI
3540	3	463	+25	+8
5160	4	396	-42	-9
5430	3	483	+45	+1
7370	4	430	-8	-2
6510	6	504	+66	+1
3220	3		+64	
6630	4	420		

USSAFAS

GUNNERY DEPARTMENT

SI PEs (GST)

GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 438

RG	CHG	ALT	VI	SI
3540	3	463	+25	+8
5160	4	396	-42	-9
5430	3	483	+45	+1
7370	4	430	-8	-2
6510	6	504	+66	+1
3220	3	502	+64	+2
6630	4	420		

USAFAS

GUNNERY DEPARTMENT

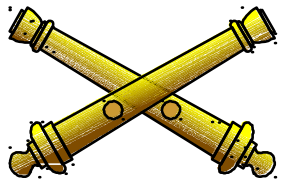
SI PEs (GST)

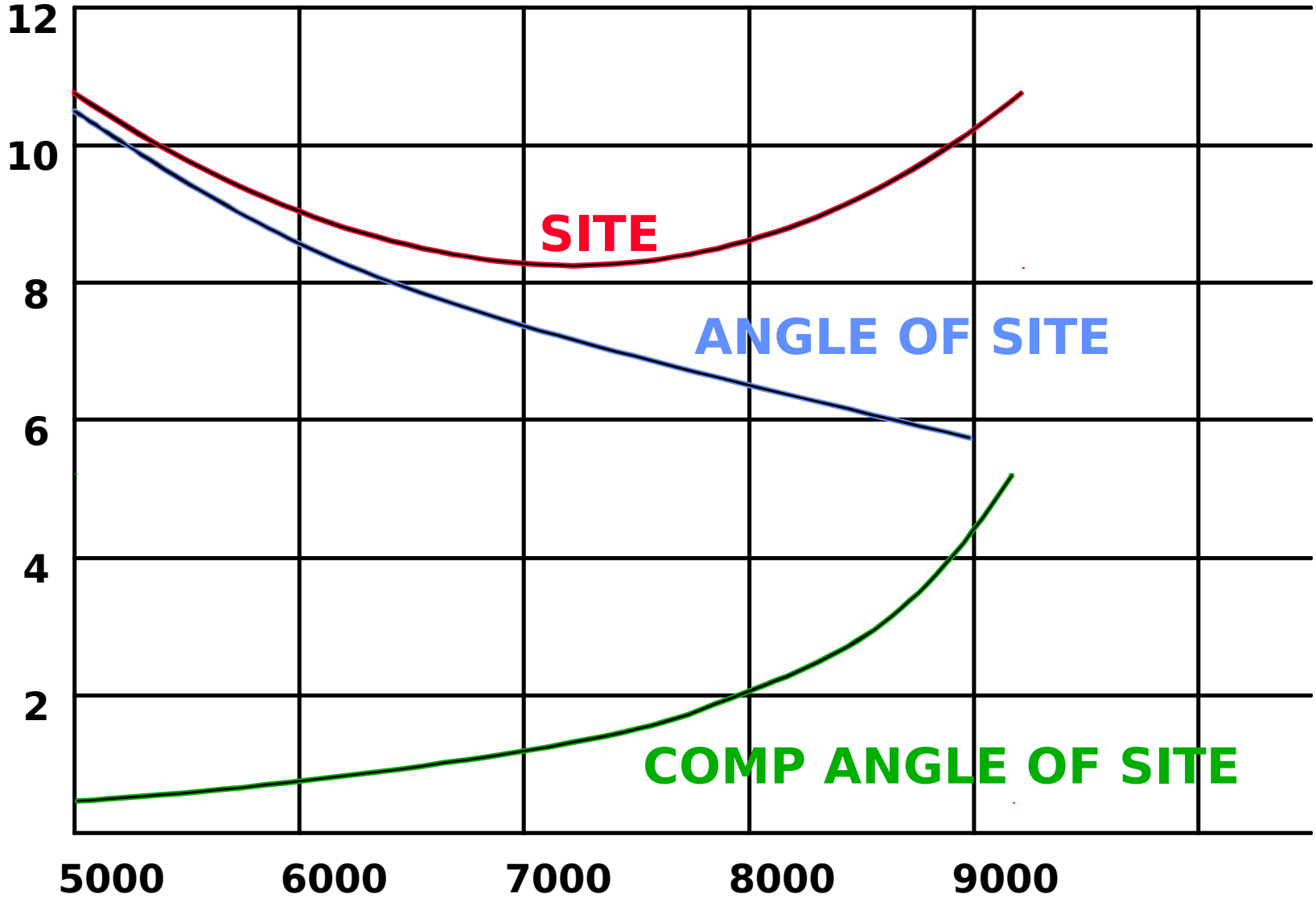
GIVEN: GST 155 AM-2
PROJ HE M107
BTRY ALT 438

RG	CHG	ALT	VI	SI
3540	3	463	+25	+8
5160	4	396	-42	-9
5430	3	483	+45	+1
7370	4	430	-8	-2
6510	6	504	+66	+1
3220	3	502	+64	+2
6630	4	420	-18	-4

USAFAS

GUNNERY DEPARTMENT





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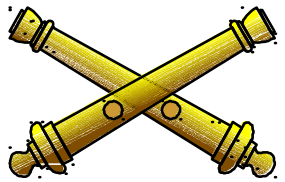
GUNNERY DEPARTMENT



THE KING OF BATTLE

USAFAS